

Action items SG40 CIELO May 2106 WPEC meeting

CIELO nuclear data files should be frozen by Nov-Dec 2016, so that the ND2018 summary CIELO documents can be written by May 2017.

O16: Arjan Plompen will discuss with Dr. Georginis why he isn't publishing his own IRMM (n,a) data below MeV neutron energy. (He previously published early data that peaked around 100 mb in the 4.2 MeV resonance, instead of the value closer to 150 mb now being recommended).

O16: The high energy capture data (>keV) in VIII-beta1 will be reassessed by Hale et al, using new astrophysical data, and also Kawano's insights into high-energy direct-semidirect. (possible that the existing VII.1 shape, from JENDL, at high neutron energies is reasonable).

O16: There seems to be a difference between Hale and Leal views of the unitarity constraints on (n,a). Hale has 2 possible files, high and low, that he argues are both consistent with the data and with unitarity. Is Hale able to put a bound on what he thinks is the range of n,a consistent with data (like total) and unitarity (esp in the important 3-6 MeV range). This would be useful to further understand the differences between the Hale file (for VIII) and the Leal file (which may be used for JEFF)

O16: LLNL Pulsed sphere and related testing (broomstick, FNS) needs to be done. For VIII.beta1 file. Ivo Kodeli will perhaps do some such transmission testing of VIII-beta1 etc.

O16: Ask Ian Hill to extend his useful analysis to oxygen.

56Fe: Leal has a file for JEFF3.3 testing that would be useful to test.

56Fe: Comments by subject matter experts such as Leal on the Trkov pragmatic evaluation choice near 24.5 keV – inspired to better model the ZPR crit data? Does Leal have a way to adequately model the ZPR data without this approach?

56Fe: Kahler will try to get, and share, the 3D ZPR9/34 model, to see how adequate is the simplified model being used.

56Fe: Chinese modeling of 14 MeV DDXS data looks very good; BNL could consider adopting aspects of this evaluation/scattering model
Likewise, the LLNL pulsed sphere at 0.9 mfp modeled well with Chinese evaluation. Also, the 1-6 MeV LLNL pulsed sphere region looks better modeled by the current VII.1 evaluation (presumably this refers to 14s that were scattered down to 1-6 MeV).

U235: Intermediate assemblies, including UH3Comet, poorly modeled, with latest VIII-beta1. ORNL-IAEA work on resonances above 20 eV (to ~100 eV) might help.

- Danon has data to compare against. 10s of eV capture data.

235U: IAEA will look into changes, including capture increases in the 2.25-20 keV region, to see if this helps Zeus, ZPR and other intermediate crits. (Note that We Haicheng suggests alpha here is already “too high” – I guess we need to understand this argument better, as the Jandel data suggests alpha could be raised here – perhaps We Haicheng has integral simulations that use other different files to us).
How is HMF7 ORNL plates impacted by changes (and at lower energies, 20-100 eV)? These currently calculate high.

235U: 235U ENDF/B-VIII-beta1 will be tested by Fukushima-san (thanks to SG39, Kenji Yokoyama) - to see how it performs on the FCA sodium void reactivity problem that got the whole ~keV lower capture issue going. Does its lower capture near 1 keV help?

235U (n,g) covariances: Salvatores (probably rightly) says previous 30% unc in fast region too high and need to be updated (MBC-10+ %?).
Russians say previous ENDF unc below fast region are too low.

Actinides: CEA will document their evaluation work. If it is in an EPJ journal as part of JEFF3.3, perhaps they might still wish to write a shorter summary in the context of CIELO, for ND2018?

238U: The latest IRMM file was not included in VIII-beta1. IAEA with IRMM and KAERI will make a new files for testing that uses the latest Geel evaluation.

238U capture: As next file is produced, make sure we have comparison graphs to show how capture compares against new standard, old standard, and old VIII.1

208U scattering: There is a suggestion that the 238U reflected fast crits could be just slightly hotter. Trkov will look and see if a tweak to angular scattering to increase back-angle data is warranted (from RPI data) and is worth considering. (Flat-top-U would get slightly worse, but most of others would get better).

238U: Fission updates near 1.2 MeV, as in the new IAEA standard, were revealed by Ian Hill's testing. These are well motivated changes. What are impacts on any crits – eg on spectral index 238f/235f in fast assemblies?

208Pb reflectors: Has the new Kawano angular representations helped with modeling lead integral experiments?

239Pu: Danon says he has unpublished 239Pu data at low energies. We should compare these against VIII-beta1 (which uses SG34 res)

239Pu capture: Consider a trial evaluation change above 30 KeV (above the URR) that follows the new Selby data. Does this higher capture cross section from 30-100 keV help impact crits? (Palmiotti adjustment work suggests a higher capture here – in 10-100 keV region).

239Pu PST: Since the a_v is 0.992, we should explore removing the Romano tweak (or using a smaller tweak) for VIII.

239Pu: When Leal has a new file to share, it would be useful to test it and compare it to VII.1, which uses SG34. Leal is also exploring use of data up to 4 keV in his resonance analysis, including use of Mosby-Jandel data.

239Pu: Ian Hill sen calcs for VIII-beta1 v VII.1 shows some surprises. It indicates that fission and capture changes put k-eff UP, and that only nubar change stake it down. This is a surprise since SG34 (in VIII-beta1) was meant to reduce k-eff owing to res work as well as nubar. Need to resolve this difference in understanding.

Actinides: SG39 and other users need cover